CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
SAN DIEGO REGION

CLEANUP AND ABATEMENT ORDER NO. R9-2004-0258
FOR
TDY INDUSTRIES, INC.
(f/k/a TELEDYNE INDUSTRIES, INC.)
TDY HOLDINGS, LLC
AND
TELEDYNE RYAN AERONAUTICAL COMPANY

2701 NORTH HARBOR DRIVE, SAN DIEGO, CALIFORNIA

The California Regional Water Quality Control Board, San Diego Region (hereinafter Regional Board), finds that:

JURISDICTION

1. **WASTE DISCHARGES.** Between the early 1940's and mid-1999, Ryan Aeronautical Company and its successors (Teledyne Ryan Aeronautical Company, Teledyne Industries, Inc. (n/k/a TDY Industries, Inc.), and TDY Holdings, LLC), hereinafter collectively referred to as "TDY", conducted aerospace component manufacturing operations on 44 acres of land at 2701 North Harbor Drive in San Diego. The land was leased from the City of San Diego and, subsequently, from the San Diego Unified Port District and is located between Lindbergh Field and Convair Lagoon, a part of San Diego Bay (hereinafter referred to as the "Site"). TDY caused or permitted waste from its manufacturing operations, including polychlorinated biphenyls (PCBs), several trace metals, and volatile organic chemicals, to be discharged to San Diego and Convair Lagoon through municipal separate storm water conveyance systems (SWCS) on the Site. TDY deposited waste (such as PCBs) from its manufacturing operations in the catch basins and collection sumps associated with the SWCS on the Site and inside the SWCS; waste has been and probably will be discharged to San Diego Bay from the SWCS. TDY also caused or permitted the discharge of waste (such as heavy metal and volatile organic chemicals) from its manufacturing operations to soils and ground water on the Site; the waste constituents may eventually migrate to San Diego Bay via various preferential pathways. PCB, volatile organic chemicals and heavy metals waste from TDY's manufacturing operations has caused and threatens to cause conditions of pollution, contamination, and nuisance by exceeding applicable water quality objectives for toxic pollutants in San Diego Bay.

2. **PERSONS RESPONSIBLE.** Ryan Aeronautical Company operated at the Site from its inception in the early 1940s until approximately 1969. In 1969, Ryan Aeronautical Company became known as Teledyne Ryan Aeronautical Company after becoming a wholly owned subsidiary of Teledyne Industries, Inc. In 1999, TDY Holdings, LLC assumed certain liabilities of Teledyne, Inc. and Teledyne Industries, Inc. changed its name to TDY Industries,

Inc. (TDY). Teledyne Ryan Aeronautical Company, Teledyne Industries, Inc., TDY Holdings, LLC, and TDY Industries, Inc. are jointly referred to as "Discharger(s)" in this Order. The Dischargers may not be the only persons responsible for discharges of PCBs and other waste into Convair Lagoon and San Diego Bay, or for deposits of PCBs and other waste into the storm drains serving the Site and for cleanup and abatement. PCBs have been detected in the SWCS up-gradient from the Site as well as in storm drains and catch basins at the Site. After obtaining access to the Site, TDY can proceed, within the limits of the Site, with site investigation and characterization, as well as cleanup and abatement of pollution in areas not subject to discharges from up-gradient sources, without assistance from up-gradient contributors.

REGULATORY AND FACTUAL BACKGROUND

3. **SITE LEASE AGREEMENTS.** Ryan Aeronautical Company originally leased the Site from the City of San Diego in 1939. In 1963 the lease was transferred from the City of San Diego to the San Diego Unified Port District. The Site was leased by subsequent Dischargers from the San Diego Unified Port District (Port of San Diego), the owner of the Site, in its capacity as trustee of tidelands for the State of California.

4. **SITE OPERATIONAL STATUS.** TDY ceased its manufacturing operations in 1999 when the majority assets of Ryan, excluding some equipment and all of the buildings, were sold to Northrop Grumman Corporation, who relocated the assets from the Site. TDY retained responsibility for the Site, including maintenance of the buildings and other structures, until the Site was vacated on October 31, 2002. TDY continues to be responsible for the cleanup and abatement of the pollution it caused or permitted at the Site.

5. **INDUSTRIAL STORM WATER NPDES PERMIT.** Beginning on April 6, 1992, the discharge of storm water from the Site was regulated under Order No. 91-13, General Permit No. CAG000001, *Waste Discharge Requirements for Discharges of Storm Water Associated with Industrial Activity Excluding Construction Activities* (General Permit). The discharge of storm water from the Site is currently regulated under Order No. 97-03-DWQ which superceded the requirements of Order No. 91-13.

6. **STORM WATER CONVEYANCE SYSTEM.** Storm water from the Site is discharged through six conduits/pipes that constitute the SWCS that drain to Convair Lagoon and San Diego Bay. From west to east, the SWCS includes:

   a. A 54-inch diameter conduit/pipe that originates upstream from the Site and receives runoff from western portions of the Site;

   b. A western 30-inch diameter conduit/pipe that originates onsite and receives runoff from the south-central portion of the Site;

   c. A 60-inch diameter conduit/pipe that originates upstream from the Site and receives runoff from the central portion of the Site;

d. An eastern 30-inch diameter conduit/pipe that originates onsite and receives runoff from the east-central portion of the Site;

e. An 18-inch diameter conduit/pipe that originates onsite and receives runoff from the eastern portion of the Site; and

f. A 36-inch diameter conduit/pipe that originates onsite and receives runoff from the eastern portion of the Site.

7. **PCBs.** PCBs are a family of organic compounds that are produced by substituting chlorine atoms for hydrogen atoms on a biphenyl molecule. Due to their non-flammability, chemical stability, high boiling point and electrical insulating properties, PCBs were commonly used in onsite industrial applications including electrical, heat transfer, and hydraulic equipment. PCBs may have also been used as a plasticizer in paints used at the Site[1]. Concern over the toxicity and persistence in the environment of PCBs led Congress in 1976 to enact Section 6(e) of the Toxic Substances Control Act (TSCA) that included, among other things, prohibitions on the manufacture, processing, and distribution in commerce of PCBs. The uncontrolled discharge of PCBs from the Site to San Diego Bay threatens to cause a condition of pollution and contamination in San Diego Bay:

   a. ***PCB Bioaccumulation.*** PCBs tend to be sorbed to bay bottom marine sediments and are transported and deposited with bay sediments. Bay sediment re-suspension can reintroduce PCBs into the aquatic environment and extend their environmental impacts. Fish and other aquatic organisms are exposed to PCBs through direct intake of contaminated water and sediments, or through consumption of contaminated food. PCBs have the potential to bioaccumulate in organisms and biomagnify through the food chain.

   b. ***Human Health Threat***. The accumulation of PCBs in the sediment is a potential threat to human health primarily by consumption of fish and shellfish contaminated by chemicals in the sediment through the processes of bioaccumulation and biomagnification. Other potential pathways of exposure include direct contact with contaminated sediments by swimmers or divers and incidental ingestion of contaminated sediment or associated water by swimmers or divers.

8. **CLEANUP AND ABATEMENT FOR PAST DISCHARGES OF PCBs.** Pursuant to Cleanup and Abatement Order (CAO) No. 86-92, with amendments, TDY removed PCB wastes from the Site and the SWCS and replaced portions of the onsite SWCS between 1986 and 1998. TDY installed an engineered sand cap in Convair Lagoon to isolate marine sediments containing PCBs at concentrations greater than 4.6 mg/kg from benthic organisms and San Diego Bay. TDY used source material from the Carroll Canyon CALMAT facility with no detectable PCBs to construct the sand cap.

[1] *Report on Exterior Surface Material Sampling for Polychlorinated Biphenyls, Former Teledyne Ryan Aeronautical Facility, 2701 North Harbor Drive, San Diego, California,* Haley & Aldrich, Inc., July 2003.

9. **SAND CAP REGULATION.** TDY maintains the sand cap in accordance with waste discharge requirements issued in Order No. 98-21, *Waste Discharge Requirements for Teledyne Ryan Aeronautical, Closure and Post-Closure Maintenance of the Convair Lagoon Sand Cap, San Diego Bay*. Order No. 98-21 established requirements for the long-term maintenance and monitoring of the sand cap. The monitoring requirements of Order No. 98-21 include sand cap and SWCS sediment sampling and analysis.

10. **NOTICE OF TERMINATION DENIAL.** On August 28, 2003, TDY requested termination of enrollment for coverage under the Industrial Storm Water General Permit, Order No. 97-03-DWQ. By letter dated September 2, 2003 the Regional Board denied the request due to the presence of PCBs in the Site SWCS and apparent continuing discharges of PCB contaminated sediments to Convair Lagoon and San Diego Bay.

ONGOING PCB DISCHARGES

11. **SWCS PCB DISCHARGES.** PCB concentrations have continued to be found in the SWCS in sampling events conducted after the cleanup and/or replacement of the onsite SWCS sections was concluded in 1998. SWCS sampling was conducted at various times between the years 1999 – 2003 by the Port of San Diego and TDY Industries. PCB concentrations were found in all of the storm drains sampled. Elevated PCB concentrations above 4.6 mg/kg (the residual PCB sediment concentration level established in CAO 86-92)[2] were found in 17 out of 47 sediment samples taken from the SWCS since 1999[3]. PCBs found in the SWCS are conveyed and discharged to Convair Lagoon and San Diego Bay during storm events. The SWCS sampling results are summarized below:

STORM DRAIN	NUMBER OF PCB SAMPLE VALUES 1999 - 2003	RANGE OF PCB VALUES (mg/kg)	NUMBER OF ELVATED PCB VALUES ABOVE 4.6 mg/kg
East 30 Inch Drain	19	0.02 – 33.8	7
60 Inch Storm Drain	15	0.2 - 27	6
54 inch Storm Drain	9	0.02 – 7.34	1
36 inch Storm Drain	3	2.8 – 22.34	2
18 inch Storm Drain	1	11.02	1
Total Samples	**47**		**17**

12. **PCB ACCUMALATION ON SAND CAP.** PCBs discharged from the SWCS at the Site are being deposited on the surface of the Convair Lagoon Sand Cap in San Diego Bay at concentrations in excess of 1 mg/kg, and ranging from 1.77 mg/kg up to 20.44 mg/kg by 2003.

[2] *Addendum No. 4 To Cleanup and Abatement Order No. 86-92 For Teledyne Ryan Aeronautical Near Lindbergh Field, San Diego County,* San Diego Regional Water Quality Control Board, December 9, 1991.

[3] *Report on Storm Water Conveyance System Maintenance, Former Teledyne Ryan Aeronautical Facility Site, 2701 N. Harbor Drive, San Diego, California,* Haley & Aldrich, Inc., April 2003.

13. **VIOLATIONS OF NPDES REQUIREMENTS**. The continuing discharge of PCBs from the Site into and from the SWCS to Convair Lagoon and San Diego Bay is a violation of Prohibitions A.1 and A.2. of Order No. 97-03-DWQ.

    a. Prohibition A.1 states: " Except as allowed in Special Conditions (D.1.) of this General Permit, materials other than storm water (non-storm water discharges) that discharge either directly or indirectly to waters of the United States are prohibited….."

    b. Prohibition A.2 states that: "Storm water discharges and authorized non-storm water discharges shall not cause or threaten to cause a pollution, contamination, or nuisance."

    The discharge of PCBs from the Site into and through the SWCS to Convair Lagoon and San Diego Bay is a violation of Effluent Limitation B.3 of Order No. 97-03-DWQ. Effluent Limitation B.3. states that: "Facility operators covered by this General Permit must reduce or prevent pollutants associated with industrial activity in storm water discharges and authorized non-storm water discharges through implementation of BAT for toxic and non-conventional pollutants and BCT for conventional pollutants. . . ." TDY failed to implement adequate BMPs to prevent the discharge of PCBs and PCB contaminated sediment to its SWCS and to San Diego Bay. PCBs continue to be present in the SWCS, as monitoring conducted between the years 1999- 2002 demonstrates. PCBs continue to be discharged from the SWCS into Convair Lagoon and San Diego Bay.

14. **BASIN PLAN PROHIBITION VIOLATION.** The discharge of PCBs into and from the SWCS to Convair Lagoon is a violation of Waste Discharge Prohibition No. 1 of the Water Quality Control Plan for the San Diego Region (9) (Basin Plan). Prohibition No. 1 states "The discharge of waste to waters of the state is a manner causing, or threatening to cause a condition of pollution, contamination or nuisance as defined in California Water Code Section 13050, is prohibited."

OTHER DISCHARGES

15. **WASTE DISCHARGES TO SOIL AND GROUND WATER.** Wastes discharges to soil and ground water of various volatile organic chemicals and heavy metal constituents have occurred, or are suspected to have occurred, from the following aerospace component and manufacturing business processes and equipment: solvent degreasing, parts cleaning, metal cutting, foundry operations, storage of chemical products, hazardous waste storage, chemical process lines, electrical vaults, engine testing, photo processing, sand blasting, explosives forming, painting, air compressors, autoclaves, steam generators, chemical mixing, welding, and equipment maintenance.

    a. In 1988, tetrachloroethylene (PCE) concentrations up to 7,300 mg/kg were detected in soil south of Building 120 during a storm drain removal project. Although some contaminated soil has been removed from this area, neither the full extent nor the source

of PCE contamination in this area has been identified[4].

b. In 2002, PCE concentrations as high as 14,000 µg/L were found in ground water in the vicinity of degreasers located in Building 120. Degreasers were used in various locations in this building including Degreaser 11 in the south-central area of the building, Degreaser 76 in the northeast corner of the building and Degreaser 77 in the southeastern corner of the building. The extent of the chlorinated plume in the ground water located beneath these areas has not been defined[5].

c. In 2002, investigation of an area in the vicinity of Building 158, near a former chromic acid tank, revealed hexavalent chromium concentrations in ground water as high as 52,000 µg/L. The extent of the hexavalent chromium plume has not been defined.

16. **BASIN PLAN PROHIBITION VIOLATION.** The discharges of volatile organic chemicals and heavy metal wastes are a violation of Waste Discharge Prohibition No. 1 of the Water Quality Control Plan for the San Diego Region (9) (Basin Plan). Prohibition No. 1 states "The discharge of waste to waters of the state in a manner causing, or threatening to cause a condition of pollution, contamination or nuisance as defined in California Water Code Section 13050, is prohibited."

a. Chromic acid is used in the aerospace component and manufacturing business for metal plating and electrolytic deposition of chromium coatings on aircraft parts to increase resistance to corrosion. Chromic acid is the common name for chromium anhydride (CrO_3) and contains hexavalent chromium (Cr^{6+}). Hexavalent chromium is known to cause cancer in humans when inhaled.

b. Tetrachloroethylene (PCE) is a volatile organic chemical used in the aerospace component and manufacturing to remove grease from fabricated metal. The USEPA classifies PCE as a probable human carcinogen.

c. Site discharges of volatile organic chemicals such as tetrachloroethylene (PCE) and heavy metals such as hexavalent chromium to soil and ground water may ultimately reach San Diego Bay through migration of ground water containing these waste constituents into storm drains or into backfill surrounding storm drains. Soil containing these waste constituents can also enter storm drains either from the surface or through breaches in the SWCS. The regional ground water gradient is directed toward San Diego Bay. Because of the proximity of the Site to San Diego Bay, there is a potential for ground water containing these waste constituents to migrate directly into the Bay.

[4] *Environmental Assessment, Former Teledyne Ryan Aeronautical Facility, 2701 N. Harbor Drive, San Diego, California,* PES Environmental, Inc., January 18, 2001.

[5] *Report of Site Assessment Activities, Former Teledyne Ryan Aeronautical Facility, 2701 N. Harbor Drive, San Diego, California,* GeoSyntec Consultants, September 13, 2002.

d. These potential discharges to San Diego Bay threaten to cause applicable water quality objectives in San Diego Bay to be exceeded and pollution conditions in San Diego Bay.

STATUTORY AND REGULATORY FINDINGS

17. **LEGAL AND REGULATORY AUTHORITY.** This Order is based on (1) Section 13267 and Chapter 5, Enforcement and Implementation commencing with Section 13300 of the Porter-Cologne Water Quality Control Act (Division 7 of the Water Code, commencing with Section 13000); (2) applicable state and federal regulations; (3) all applicable provisions of statewide Water Quality Control Plans adopted by the State Water Resources Control Board and the *Water Quality Control Plan for the San Diego Basin* (Basin Plan) adopted by the Regional Board including beneficial uses, water quality objectives, and implementation plans; (4) State Water Board policies, including State Water Board Resolution No. 68-16 (*Statement of Policy with Respect to Maintaining High Quality of Waters in California*) and Resolution No. 92-49 (*Policies and Procedures for Investigation and Cleanup and Abatement of Discharges Under Water Code Section 13304*); and (5) relevant standards, criteria, and advisories adopted by other state and federal agencies.

18. **CEQA EXEMPTION.** This enforcement action is exempt from the provisions of the California Environmental Quality Act (CEQA) in accordance with Section 15321 (Enforcement Actions by Regulatory Agencies), Chapter 3, Title 14 of the California Code of Regulations.

ORDER DIRECTIVES

IT IS HEREBY ORDERED that, pursuant to Sections 13267 and 13304 of the California Water Code, Teledyne Ryan Aeronautical Company, TDY Holdings LLC, and TDY Industries, Inc., (hereinafter Discharger(s)), shall comply with the following directives:

A. CLEANUP AND ABATE DISCHARGES

1. ***Duty to Comply.*** The Discharger(s) shall take all corrective actions[6] necessary to:

   a. Investigate, cleanup, and abate discharges of PCBs, volatile organic chemicals, and heavy metals (hereinafter waste constituents) at the Site;

   b. Achieve compliance with site-specific cleanup levels as prescribed by the Regional Board and;

   c. Terminate illicit waste discharges to the onsite storm water conveyance system (SWCS) and achieve compliance with the terms and conditions of Order No. 97-03-DWQ,

[6] Corrective Actions include the following phases of cleanup and abatement described in Directives B through F of this Cleanup and Abatement order: (1) Site Investigation and Characterization phase; (2) Remedial Investigation and Feasibility Study phase; (3) Remedial Action Plan Implementation phase; and (4) Cleanup and Abatement Completion Verification phase.

General Permit No. CAG000001, *Waste Discharge Requirements for Discharges of Storm Water Associated with Industrial Activity Excluding Construction Activities*.

B. SITE INVESTIGATION AND CHARACTERIZATION

1. ***Conceptual Site Model.*** The Discharger(s) shall begin site investigation and characterization activities by first constructing a conceptual site model (CSM)[7] based on available site-specific data on the occurrence of waste constituents in the storm water conveyance system (SWCS), soil, and ground water. The CSM shall identify the source(s) of PCBs, volatile organic chemicals (VOCs), and heavy metals; the waste constituent composition and concentration; affected media (soil and water, three dimensional spatial extent and temporal variability of the waste constituents; routes of waste constituent migration; and the location and exposure points of actual and potential receptors (humans, animals, and plants).

   The CSM shall be refined and updated as site characterization data becomes available. The initial CSM shall include a discussion of the level of uncertainty of conclusions, outline data gaps in the initial CSM, and describe the additional work needed to complete the CSM. Updates to the CSM shall be included in all future technical and monitoring reports submitted. The initial CSM shall be submitted to the Regional Board with the workplan described in Directive B.2.

2. ***Site Investigation and Characterization Workplan***. The Discharger(s) shall develop and submit to the Regional Board by **January 28, 2005**, a workplan designed to guide the collection of information to produce the Site Investigation and Characterization Report described in Directive B.3.

   a. *Conceptual Site Model (CSM)*. The workplan shall include the initial CSM described in Directive B.1. and a description of proposed actions including field methodologies, chemical analyses methods, sampling locations and proposed monitoring well installations. Contingencies for collection of additional samples should be proposed in the work plan.

   b. *Report Completion Schedule*. The workplan shall include a schedule for completion of all activities and submission of a final Site Investigation and Characterization Report described in Directive B.3.

[7] The Conceptual Site Model (CSM) is a narrative and graphical description of the characteristics of the Site that may affect the distribution and migration of waste constituents. Development of a CSM is an important first step in planning and scoping any site assessment designed to determine the potential impacts of contamination on public health and the environment. In documenting current site conditions, CSMs are used as a planning tool during the environmental site investigation phase to allocate finite financial and personnel resources to address data gaps, identify sources of contamination, release mechanisms, exposure pathways, and human or ecological receptors.

c. *Regional Board Notification*. The workplan shall provide for Regional Board notification at least two weeks before the start of fieldwork.

d. *Presumptive Remedies.* Presumptive remedies[8] shall be considered during the development of the workplan so that data needed for selection and design of remedial alternatives may be collected during site characterization.

e. *Workplan Modification.* The Discharger(s) shall modify the workplan as requested by the Regional Board.

f. *Workplan Implementation.* The Discharger(s) shall implement the workplan sixty (60) days after submission of the workplan, unless otherwise directed in writing by the Regional Board. Before beginning these activities the Discharger(s) shall:

(1) Notify the Regional Board of the intent to initiate the proposed actions included in the workplan submitted; and

(2) Comply with any conditions set by the Regional Board, including mitigation of adverse consequences from cleanup activities.

3. ***Site Investigation and Characterization Report.*** The Discharger(s) shall prepare and submit a Site Investigation and Characterization Report describing the final results of the Site investigation and characterization study on a schedule to be established by the Regional Board in a subsequent amendment to this CAO based on the Characterization Workplan prepared pursuant to Directive B.2. The Report shall contain the following information:

a. *Conceptual Site Model.* The Report shall contain an updated CSM based on the results of the Site investigation and characterization study;

b. *Source Characterization.* The Report shall describe the results of an investigation of all potential sources of waste constituent discharges to the soil, ground water and storm water conveyance system based on historical records of operations, site reconnaissance, and previous sampling studies. Potential sources that should be investigated include tanks, drains, sumps, areas of stained ground, container storage areas, transformers, and other areas where waste constituents were handled, stored, or used. All sources of waste constituent releases shall be located on a site map at a scale of 1 inch = 200 feet or larger, with an appropriate contour interval to depict site topography. Individual maps should be developed for different classes of waste

[8] Presumptive remedies are preferred technologies based on USEPA's scientific and engineering evaluation of performance data on remedial technology implementation in the Superfund Program. The five types of sites for which there is USEPA presumptive remedy guidance are: Volatile Organic Compounds (VOCs) in Soils, Municipal Landfills, Metals in Soils, Wood Treaters, and Contaminated Ground Water. The objective of USEPA's presumptive remedies initiative is to use the experience gained by USEPA in the Superfund Program to streamline site investigation and speedup selection of cleanup actions. Additional information on presumptive remedies can be obtained from USEPA's website at *http://www.epa.gov/superfund/resources/presump.*

constituents (e.g., VOCs, PCBs, and heavy metals). A combined map shall also be included showing all classes of waste constituents on a single map.

c. *Storm Water Conveyance System Characterization (SWCS).* The Report shall characterize the presence of waste constituents in loose and cemented sediment found in the SWCS (including catch basins tributary to the SWCS). The report shall also address the relationship of tidal influences in the SWCS to sediment samples collected from the SCWS. All onsite storm drains and storm drain sumps shall be located on a site map at a scale of 1 inch = 200 feet or larger, with an appropriate contour interval to depict site topography.

d. *Geologic Characterization.* The Report shall characterize the subsurface geology, the hydrogeologic characteristics and preferential pathways that may affect ground water flow and contaminant migration.

e. *Ground Water Flow Characterization.* The Report shall describe the rate(s) and direction(s) of local ground water flow, in both the horizontal and vertical dimension, for all water bearing units potentially affected by the waste constituents from the Site.

f. *Extent of Waste Constituent Characterization.* The Report shall characterize the lateral and vertical extent of each waste constituent in soil and ground water to the background[9] value for that waste constituent.

g. *Ground Water Monitoring Wells.* The Report shall describe the location of existing monitoring wells and the proposed location of additional monitoring wells needed to characterize the types of waste constituents present, the concentrations of waste constituents and their lateral and vertical extent in ground water. Methods for purging and sampling monitoring wells must be capable of providing representative samples of ground water for detecting the waste constituents of interest.

h. *Field Methodologies.* The Report shall describe the field methodologies used for drilling, soil sampling, ground and surface water sampling, and SWCS sampling, well and peizometer construction, geophysical surveys, and other activities.

i. *Chemical Analyses.* The Report shall describe the laboratory analytical methods and protocols used for each environmental medium including soil, soil vapor, waste or ground water. The suite of chemical analyses must be adequate to identify the full range of site-specific waste constituents. Records of chemical use or disposal shall be evaluated to provide documentation that all of the waste constituents of concern have been identified.

j. *Sample Locations and Number.* The locations, type, and number of samples shall be identified and shown on a site map and cross sections. The number of samples and

[9] "Background" means the concentrations or measures of constituents or indicator parameters in water or soil that have not been affected by waste constituents from the Site.

suite of chemical analyses must be sufficient to identify the nature of waste constituent sources, to define the distribution of waste constituents in the subsurface and the SWCS, and to provide data for risk assessment, remedy selection, and remedial design. In addition samples shall be collected to evaluate physical properties of soils and aquifer materials. All sample data shall be presented in tabular form, to include the sample result, sample medium, location, depth, sampling method, analyses and rationale for the method.

C. INTERIM REMEDIAL ACTIONS

1. ***Take Interim Remedial* Actions.** The Discharger(s) shall take interim remedial actions as necessary to abate or correct the actual or potential effects of the unauthorized releases described in this cleanup and abatement order. Interim remedial actions can occur concurrently with any phase of the Site investigation or remedial action.

2. ***Interim Remedial Actions.*** Interim remedial actions include but are not limited to:

   a. Excavation and disposal of contaminated soil:
   b. Excavation and treatment of contaminated soil:
   c. Pumping and treatment of ground water to remove dissolved constituents; and
   d. Vacuum extraction of waste constituents from soil, ground water and the SWCS.

3. ***Regional Board Notification.*** The Discharger(s) shall notify the Regional Board before taking any proposed interim remedial actions, and comply with any additional requirement that the Regional Board sets.

D. REMEDIAL INVESTIGATION AND FEASIBILITY STUDY (RIFS)

1. ***Remedial Investigation and Feasibility Study (RIFS)* Workplan.** The Discharger(s) shall, using information in the Site Investigation and Characterization Report, prepare a workplan for the development of a RIFS as described in Directive D.3. The Dischargers shall submit the RIFS workplan to the Regional Board within sixty (60) days following submission of the Site Investigation and Characterization Report, unless otherwise directed in writing by the Regional Board.

   a. The workplan shall include the proposed actions and a schedule for their completion and submission of a final RIFS described in Directive D.3.

   b. The Discharger(s) shall modify the workplan as requested by the Regional Board.

2. ***Workplan Implementation.*** The Discharger(s) shall commence with implementation of the RIFS workplan no later than 60 days after submission of the workplan, unless otherwise directed in writing by the Regional Board. Before beginning these activities the Discharger(s) shall:

a. Notify the Regional Board of the intent to initiate the proposed actions included in the workplan submitted; and

b. Comply with any conditions set by the Regional Board.

3. ***Remedial Investigation and Feasibility Study (RIFS).*** The Dischargers shall prepare and submit a RIFS, on a schedule to be established by the Regional Board in a subsequent amendment to this CAO based on the RIFS Workplan prepared pursuant to Directive D. 1. The RIFS shall contain the following information:

a. *Remedial Investigation.* An assessment of the actual and potential effects, of the waste constituents discharged at the Site, on ground and surface water quality and beneficial uses including, but not limited to, the following considerations:

(1) The physical and chemical characteristics of the waste constituents discharged at the Site, including their toxicity, persistence, and potential for migration in water, soil, and air;

(2) The hydrogeologic characteristics of the Site and the surrounding area where the waste constituents have migrated or may migrate;

(3) The rate and direction of ground water flow in both the horizontal and vertical dimension, for all water bearing units potentially or actually affected by the waste constituents from the Site;

(4) The proximity of the Site to San Diego Bay, a SWCS tributary to San Diego Bay, and the Convair Lagoon Sand Cap;

(5) The potential for health risks caused by human exposure to the waste constituents;

(6) The potential for damage to aquatic life and wildlife caused by exposure to the waste constituents; and

(7) The persistence and permanence of the potential adverse effects.

b. *Feasibility Study.* A feasibility study to evaluate alternatives, including the cost and effectiveness of each alternative, for the cleanup or remediation of the waste constituents to:

(1) Attain a range of applicable soil, ground water and SWCS cleanup levels between background water quality conditions and alternative cleanup levels derived by applying the conditions set forth in Title 23, Chapter 15, Article 5, Section 2550.4. Alternate cleanup levels shall not unreasonably affect present and anticipated beneficial uses of waters of San Diego Bay and not result in water quality less than that prescribed in the Water Quality; and Control Plans and Policies adopted by the

State and Regional Board.[10]

(2) Ensure that waste constituents discharged into and through the SWCS at the Site are reduced to levels commensurate with implementation of best available technology (BAT) for toxic and non-conventional pollutants and best conventional technology (BCT) for conventional pollutants.

(3) Ensure that discharges into and through the SWCS at the Site do not contain waste constituents that will accumulate to toxic levels in San Diego Bay waters, marine sediment or biota.

c. *Recommended Remedial Alternative.* A recommended alternative for the cleanup or remediation of the waste constituents.

E. REMEDIAL ACTION PLAN IMPLEMENTATION

1. ***Remedial Action Plan (RAP).*** The Discharger(s) shall submit a RAP to the Regional Board within sixty (60) days following submission of the Remedial Investigation and Feasibility Study (RIFS), unless otherwise directed in writing by the Regional Board. The RAP shall contain the following information:

   a. *Implementation Activities.* A detailed description of all activities planned to implement the recommended alternative for the cleanup or remediation of the waste constituents described in the final RIFS and a schedule for their completion; and

   b. *Monitoring Activities* - A monitoring program to demonstrate the effectiveness of the RAP. The monitoring program shall be effective in determining compliance with the cleanup levels and in determining the success of the remedial action measures.

2. ***Remedial Action Plan (RAP) Implementation.*** In the interest of minimizing environmental contamination and promoting prompt cleanup, the Discharger(s) may begin implementation of the RAP sixty (60) calendar days after submittal to the Regional Board, unless otherwise directed in writing by the Regional Board. Before beginning RAP implementation activities, the Discharger(s) shall:

   a. Notify the Regional Board of its intention to begin cleanup; and

[10] 23 CCR 2550.4 (c) provides that the Regional Board may establish a cleanup level for a constituent of concern that is greater than the background value of that constituent only if the Regional Board finds that it is technologically or economically infeasible to achieve the background value for that constituent and that the constituent will not pose a substantial present or potential hazard to human health or the environment as long as the cleanup level greater than background is not exceeded. In making this finding, the Regional Board will consider the factors specified in section 2550.4(d), the Remedial Investigation and Feasibility Study submitted pursuant to Directive D of this cleanup and abatement order, monitoring data submitted by the discharger to support the proposed cleanup level greater than background, public testimony on the proposal, and any additional data or information.

b. Comply with any conditions set by the Regional Board, including mitigation of adverse consequences from cleanup activities.

3. ***Remedial Action Zone.*** The Discharger(s) shall implement remedial action measures that ensure that the waste constituents achieve their respective cleanup levels at all monitoring points and throughout the zone affected by the waste constituents, including any portions thereof that extend beyond the Site boundary, by removing the waste constituents or treating them in place.

4. ***Implementation Schedule.*** Implementation of the RAP shall be completed on a schedule to be established by the Regional Board in a subsequent amendment to this CAO.

5. ***Monitoring and Evaluation.*** The Discharger(s) shall monitor, evaluate, and report the results of implementation of the RAP on a schedule to be established by the Regional Board in a subsequent amendment to this CAO.

6. ***Modify or Suspend Cleanup Activities.*** The Discharger(s) shall modify or suspend cleanup activities when directed to do so by the Regional Board.

F. CLEANUP AND ABATEMENT COMPLETION VERIFICATION

1. ***Cleanup and Abatement Completion Report.*** The Discharger(s) shall submit a final Cleanup and Abatement Completion Report verifying completion of the Remedial Action Plan (RAP) through sampling or other monitoring of the soil, ground water, and SWCS for a period of at least one year. The monitoring period shall begin immediately after the completion of remedial action measures and be conducted at intervals proposed by the Discharger(s) and agreed to by the Regional Board. The report shall provide a demonstration, based on a sound technical analysis, that:

   a. Cleanup levels for all waste constituents are attained at all monitoring points and throughout the zone affected by the waste constituents, including any portions thereof that extend beyond the Site boundary; and

   b. Illicit waste discharges into and through the storm water conveyance system (SWCS) at the Site are terminated and compliance is achieved with the terms and conditions of Order No. 97-03-DWQ, General Permit No. CAG000001, *Waste Discharge Requirements for Discharges of Storm Water Associated with Industrial Activity Excluding Construction Activities*.

2. ***Regional Board Concurrence.*** Upon concurrence with the findings of the Cleanup and Abatement Completion Report that remedial actions are complete and that compliance with this Cleanup and Abatement Order is achieved, the Regional Board will inform the Discharger(s) and other interested persons in writing that no further remedial work is required at this time, based on available information. This written notice shall constitute Regional Board concurrence with the completed remedial actions.

G. PROVISIONS

1. ***Duty to Comply.*** The Discharger(s) shall properly handle, store, treat, and dispose of contaminated soils and ground water in accordance with applicable federal, state, and local laws and regulations. The handling, storage, treatment, or disposal of soil, sediment, and groundwater containing waste constituents shall not create conditions of pollution, contamination or nuisance as defined in California Water Code section 13050(m). The Discharger(s) shall, as required by the Regional Board, obtain, or apply for coverage under, waste discharge requirements or a conditional waiver of waste discharge requirements, for the removal of waste from the immediate place of release and for any discharge of the waste to (a) land for treatment, storage, or disposal or (b) waters of the state.

2. ***Request to Provide Information.*** The Discharger(s) may present characterization data, preliminary interpretations and conclusions as they become available, rather than waiting until a final report is prepared. This type of on-going reporting can facilitate a consensus being reached between the Discharger(s) and the Regional Board and may result in overall reduction of the time necessary for regulatory approval.

3. ***Waste Constituent Analysis.*** Unless otherwise permitted by the Regional Board, all analyses shall be conducted at a laboratory certified for such analyses by the State Department of Health Services. Specific methods of analysis must be identified. If the Discharger(s) proposes to use methods or test procedures other than those included in the most current version of *"Test Methods for Evaluating Solid Waste, Physical/Chemical Methods, SW-846"* (U.S. Environmental Protection Agency) or 40 CFR 136, "*Guidelines Establishing Test Procedures for the Analysis of Pollutants; Procedures for Detection and Quantification* ", the exact methodology must be submitted for review and must be approved by the Regional Board prior to use. The director of the laboratory whose name appears on the certification shall supervise all analytical work in his/her laboratory and shall sign all reports submitted to the Regional Board.

4. ***Duty to Operate and Maintain.*** The Discharger(s) shall, at all times, properly operate and maintain all facilities and systems of treatment, control, storage, disposal and monitoring (and related appurtenances) which are installed or used by the Discharger(s) to achieve compliance with this Cleanup and Abatement Order. Proper operation and maintenance also includes adequate laboratory controls and appropriate quality assurance procedures. This provision requires the operation of back-up or auxiliary facilities, which are installed by the Discharger(s) only when the operation is necessary to achieve compliance the conditions of this Cleanup and Abatement Order.

5. ***Duty to Use Qualified Professionals.*** The Discharger(s) shall provide documentation that plans and reports required under this Order are prepared under the direction of appropriately qualified professionals. California Business and Professions Code Sections 6735, 7835 and 7835.1 require that engineering and geologic evaluations and judgments be performed by or under the direction of registered professionals. A statement of qualifications and registration numbers, if applicable, of the responsible lead professionals

shall be included in all plans and reports submitted by the Discharger(s). The lead professional shall, if registered, sign and affix their registration stamp to the report, plan or document.

6. ***Corporate Signatory Requirements.*** All reports required under this Order shall be signed and certified by a responsible corporate officer(s) of the Discharger(s) described in paragraph 5.a. of this provision or by a duly authorized representative of that person as described in paragraph 5.b.of this provision.

   a. *Responsible Corporate Officer(s).* For the purposes of this provision, a responsible corporate officer means: (i) A president, secretary, treasurer, or vice-president of the corporation in charge of a principal business function, or any other person who performs similar policy - or decision-making functions for the corporation, or (ii) the manager of one or more manufacturing, production, or operating facilities, provided, the manager is authorized to make management decisions which govern the operation of the regulated facility including having the explicit or implicit duty of making major capital investment recommendations, and initiating and directing other comprehensive measures to assure long term environmental compliance with environmental laws and regulations; the manager can ensure that the necessary systems are established or actions taken to gather complete and accurate information for permit application requirements; and where authority to sign documents has been assigned or delegated to the manager in accordance with corporate procedures.

   b. *Duly Authorized* Representative. A person is a duly authorized representative only if:

      (1) The authorization is made in writing by a person described in paragraph (a) of this provision;
      (2) The authorization specifies either an individual or a position having responsibility for the overall operation of the regulated facility or activity such as the position of plant manager, operator of a well or a well field, superintendent, position of equivalent responsibility, or an individual (A duly authorized representative may thus be either a named individual or any individual occupying a named position.); and
      (3) The written authorization is submitted to the Regional Board.

   c. *Changes to Authorization.* If an authorization under paragraph (b) of this provision is no longer accurate because a different individual or position has responsibility for the overall operation of the facility, a new authorization satisfying the requirements of paragraph (b) of this provision must be submitted to the Regional Board prior to or together with any reports or information to be signed by an authorized representative.

   d. *Certification Statement.* Any person signing a document under paragraph a. or b. of this provision shall make the following certification:

      ”I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that

qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations."

7. ***Electronic and Paper Media Reporting Requirements***. The Discharger(s) shall submit both electronic and paper copies of all reports required under this Cleanup and Abatement Order including workplans, technical reports, and monitoring reports. The Discharger shall comply with electronic reporting requirements of CCR Title 23, Division 3, Section 3893, including the provision requiring that complete copies of all reports be submitted in PDF format, and include the signed transmittal letter and professional certification.

8. ***Report Submittals.*** All monitoring and technical reports required under this Cleanup and Abatement Order shall be submitted to:

   Executive Officer
   California Regional Water Quality Control Board
   San Diego Region
   9174 Sky Park Court, Suite 100
   San Diego, CA 92123-4340

9. ***Duty to Submit Other Information.*** When the Discharger(s) becomes aware that it failed to submit any relevant facts in any report required under this Cleanup and Abatement Order, or submitted incorrect information in any such report, the Discharger(s) shall promptly submit such facts or information to the Regional Board.

10. ***Identify Documents Using Code Number.*** In order to assist the Regional Board in the processing of correspondence and reports submitted in compliance with this Cleanup and Abatement Order, the Discharger(s) shall include the following code number in the header or subject line portion of all correspondence or reports submitted to the Regional Board:

ICU: 02-0381.05.

H. NOTIFICATIONS

1. ***Cost Recovery.*** Pursuant to California Water Code Section 13304(c), the Regional Board is entitled to, and may seek reimbursement for, all reasonable costs actually incurred by the Regional Board to investigate unauthorized discharges of waste and to oversee cleanup of such waste, abatement of the effects thereof, or other remedial action, required by the Order.

2. ***Replacement of Prior Cleanup and Abatement Order***. This Cleanup and Abatement Order replaces the version of Cleanup and Abatement Order No. R9-2004-0258 issued on

October 4, 2004 in order to clarify the jurisdictional basis and scope of the Regional Board's findings regarding the nature and circumstances of discharges of waste from TDYs aerospace component manufacturing operations as well as directives to cleanup and abate the discharges. Except as contradicted or superceded by the findings and directives set forth in this Cleanup and Abatement Order, all of the previous findings and directives of Cleanup and Abatement Order No. R9-2004-0258 issued on October 4, 2004 are incorporated into this Cleanup and Abatement Order.

3. ***Enforcement Discretion.*** The Regional Board reserves its right to take any enforcement action authorized by law for violations of the terms and conditions of this Cleanup and Abatement Order.

4. ***Enforcement Notification.*** The Porter-Cologne Water Quality Control Act (Division 7 of the Water Code, commencing with Section 13000), commencing with Chapter 5, Enforcement and Implementation, Section 13308, provides that if there is a threatened or continuing violation of a cleanup and abatement order, the Regional Board may issue a Time Schedule Order prescribing a civil penalty in an amount not to exceed $10,000 per day for each day compliance is not achieved in accordance with that time schedule. Section 13350 provides that any person may be assessed administrative civil liability by the Regional Board for violating a cleanup and abatement order in an amount not to exceed $5,000 for each day the violation occurs, or on a per gallon basis, not to exceed $10 for each gallon of waste discharged. Alternatively the court may impose civil liability in an amount not to exceed $15,000 for each day the violation occurs, or on a per gallon basis, not to exceed $20 for each gallon of waste discharged. Section 13385 provides that any person may be assessed administrative civil liability by the Regional Board for violating a cleanup and abatement order for an activity subject to regulation under Division 7, Chapter 5.5 of the California Water Code, in an amount not to exceed the sum of both of the following: (1) $10,000 for each day in which the violation occurs; and (2) where there is a discharge, any portion of which is not susceptible to cleanup or is not cleaned up, and the volume discharged but not cleaned up exceeds 1,000 gallons, an additional liability not to exceed $10 multiplied by the number of gallons by which the volume discharged but not cleaned up exceeds 1,000 gallons. Alternatively the civil liability may be imposed by the court in an amount not to exceed the sum of both of the following: (1) $25,000 for each day in which the violation occurs; and (2) where there is a discharge, any portion of which is not susceptible to cleanup or is not cleaned up, and the volume discharged but not cleaned up exceeds 1,000 gallons, an additional liability not to exceed $25 multiplied by the number of gallons by which the volume discharged but not cleaned up exceeds 1,000 gallons.

I, John H. Robertus, Executive Officer, do hereby certify the forgoing is a full, true, and correct copy of a Cleanup and Abatement Order issued on October 4, 2004 and revised on May 17, 2005.

JOHN H. ROBERTUS
Executive Officer